3.12 The biodiversity of ferns, butterflies and arachnids increases from south to north with increasing rainfall. Such groups of organisms are likely to be negatively affected by global warming and a reduction in rainfall in Zambia. However, those organisms exhibiting the opposite trend in biodiversity, such as Hemiptera and Hymenoptera, will probably benefit from such climate changes. Clearly, climate change will have implications for biodiversity in the country and deserves further studies in order to develop mitigation strategies.

3.13 **Introduced species.** Some introduced species have become very invasive and pose threats to ecosystems and the indigenous species. Such exotic species are termed obnoxious weeds and pests. Among such weeds are lantana, *(Lantana camara)* Kariba weed (*Salvinia molesta*) and water hyacinth (*Eichhornia crassipes)*. Lantana has become a serious weed in forest plantations in the Copperbelt area and at Victoria Falls World Heritage site in Livingstone. Control of the weed is difficult because it regenerates both sexually and asexually, especially from roots.

3.14 Kariba weed infested lake Kariba after construction in 1959 and become a serious weed covering most of the lake until 1973 when its population stabilized at tolerable levels. The water hyacinth has become a serious weed in the Kafue Gorge water reservations after it displaced the dominant aquatic plants in the ecosystem.

3.15 Introduction of fish species into a fishery can have both beneficial and negative effects. It is estimated that 42 percent of fish introductions in Zambia have not been successful. Fish introduction is a potential threat to local fish fauna. Such introductions are often caused by fish escaping from aquaculture. For example, *Oreochromis niloticus*, escaped into the Kafue river from aquaculture in the Mazabuka area. Although the impacts of this unintentional introduction have not been assessed, there are concerns about negative impacts on local fish diversity either through competition and/or hybridisation with indigenous fish.

3.16 Perhaps the biggest threat to agro-biodiversity is the introduction of improved varieties of crops, some of which have completely replaced local varieties and landraces. Improved maize varieties have replaced local varieties in many parts of the country. It is estimated that there has been a 90% adoption rate for new improved sorghum varieties which are replacing local varieties in the Gwembe valley. In some cases, commercial crops are replacing local crop varieties, such as cowpeas.

3.17 **Pollution.** The infestation of alien aquatic weeds is linked to eutrophication of water bodies by industrial, domestic and agricultural pollution and the regulation of rivers by damming. In addition pollution on water systems has highly reduced invertebrate diversity which often consists of a few pollution tolerant species with air-breathing mechanisms, such as rat-tail maggots and chironomids (Chidumayo et al. 1998).

3.18 Pollution caused by wide scale application of pesticides and herbicides to protect crops and control pests, such as tsetse-flies, disrupt natural food chains and negatively impact on biodiversity.

3.19 **Biodiversity knowledge.** Museums, herbaria and genebanks are repositories of biodiversity resources, however in Zambia these are inadequate and the few that exist are poorly funded and managed. This in turn poses a threat to the maintenance of plant and animal

collections. As some literature on biodiversity in Zambia is maintained at institutions abroad, limited access to such literature hampers the advancement of biodiversity knowledge. Lack of proper training in biodiversity management especially in Taxonomy has contributed to poor documentation of biodiversity in the country and its management. Currently, natural scientists dominate biodiversity research in Zambia. Consequently, little effort has been made to investigate the role of legal and social factors, such as land tenure and property rights in promoting biodiversity management. This approach to biodiversity analysis undermines the process of achieving a holistic understanding of biodiversity issues and needs to be changed.

3.20 **Cultural ad Social Values.** The value attached to a resource has implications on how it is used (or abused). Most of the values we attach to resources to day emanate from our traditions and cultures. Natural resources are harvested by rural communities since time immemorial for food, shelter, fuel, beverages, fibres, tools, religious purposes and cash income. These harvests are driven by the cultural/tradition imperative, survival needs and, to a greater extent, for cash income.

3.21 The extraction of biological resources like fuelwood and wild fruits by rural communities, perhaps once within the carrying capacity of surrounding forests. has now gone beyond this limit in many areas. However, given the cultural and socio-economic imperatives, exploitation still goes un-abated. Some of the biological resources that are on high demand could, in many cases, be substituted for others but because of the consumption patterns that have been built by our cultures, this is not easily accepted. It is said that most of the illegal harvested game meat is sold in urban areas despite it being more expensive than the readily accessible proteins from livestock.

3.22 Also of particular importance in assessing the impact of social and cultural values on biodiversity is the tendency to under-value natural resources. Most natural resources are valued as "free-goods" and this tend to encourage over-consumption. Thus, wild fruits are given a lower market price as compared to their closest propagated relative.

B. Institutional and Legal framework

3.23 In Zambia, a good part of the country's biodiversity is found in systems that come under state control. These include the majority of the forests, wildlife reserves, wetlands, botanical and geological gardens, gene collections, and so on. Understanding of the roles of institutions mandated to manage and use these resources and the policies and legislation guiding them is a prerequisite to the understanding of biodiversity management in Zambia. However, although a large part of the country's biological wealth comes under the jurisdiction of state agencies, these are by no means the only players. The private sector, NGOs, and groups of individual also have a strong effect on biodiversity. It is, therefore, important to assess concurrently the activities of these groups.

Natural Resources Legislation and Biodiversity Conservation

3.24 The development of legislation dealing with natural resources management date back to the colonial era. Formulation of laws followed a sectoral approach as pieces of legislation were formulated to deal with forests, wildlife, land, water, fisheries, and many other natural

resources. Given poor coordination, the promulgation of these laws brought about duplication and gaps. The first attempt to coordinate various laws was done under the auspices of the NCS of 1985. The NCS aimed at ensuring the sustainable use of renewable natural resources, maintain biological diversity and maintain essential process and life-support systems. The NCS recommended key environmental issue and prescribed policy, legislative and institutional measures to address these issues.

3.25 The main legal instruments dealing with different facets of the biological diversity, include; the Forest Act, Cap 311 (1973); Natural Resources Conservation Act, Cap 315 (1970); National Parks and Wildlife Act, No.10 (recently amended to the Zambia Wildlife Act, No.12 of 1998); Lands Act No.29 (1995); Agricultural Lands Act, Cap 292 (1960); EPPC Act, No.12 (1990); Fisheries Act, Cap 314 (1974); Plumage Birds Protection Act, Cap 310 (1915); and, Plants, Pests and Diseases Act, Cap 346 (1959). Most of these Acts are outdated and require revision in order to bring them in line with current requirements in biodiversity management.

3.26 Apart from being outdated, the sectoral approach of these legal instruments is a source of worry. Biodiversity management, in reality, requires a holistic approach given organisms, plant and animals. Apart from the Zambia Wildlife Act and the EPPC Act, the rest take a sectoral approach by focusing on one or two components of biodiversity. The Zambia Wildlife Act does not only provide for the sustainable use of wildlife but also for the effective management of wildlife habitat and the enhancement of the economic and social well being of local communities living adjacent to protected wildlife areas. The Act also provides for the conservation, protection and enhancement of wildlife ecosystems biodiversity and for the promotion of opportunities for the equitable and sustainable use of the special qualities of national parks. Above all, the Act provides for the implementation of the biodiversity conservation as well as of the related ones such as CITES, Ramsar and the Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora.

3.27 The EPPC Act and its Environmental Impact Assessment Regulations meet requirements for the conservation of biodiversity, by among other things; providing for the conservation of biodiversity including species and ecosystems in the process of project briefs and environmental impact statements.

3.28 The dualistic nature of the Zambian society recognized apart from the statute law, there is also customary law. Whilst statute law confers the rights to use of components of biodiversity to holders of the leasehold title, under customary law resource use rights are allocated to multiple users on the same piece of land. Depending on ethnic groups, the application of customary law in some societies in Zambia is advanced making it difficult to combine the implementation of the two types of laws.

Institutional Framework for Biodiversity Conservation

3.29 The various legislation mentioned in the previous section are designated to specific government institutions for their administration. These include the Department of NPWS (to transform to ZAWA as from January, 2000), Forest, Fisheries, Agriculture, and Lands.

Their mandates, as it follows from the statutes they administer, are mainly sectoral in nature. Recent amendments of enacted legislation, however, provide for a broad based institutional framework to biodiversity conservation. The ECZ, established under the auspices of the EPPC Act has a board comprising of the main stakeholders in environmental protection. These include representatives from the wildlife, fisheries and forest sectors and also from NGOs, private sector and research institutions. The proposed ZAWA also suggests a broad based representation on its board.

3.30 Traditional institutions though important for Community participation in biodiversity management, find it difficult to operate smoothly owing to lack of legal backing. Although, these institutions operated effectively before the advent of government control of natural resources, they have since been weakened and in some instances broken down. For instance, protection of wildlife, forests and fisheries in Western Province was the responsibility of the *Litunga*. Well elaborated institutional framework stemming from the village to *Silalo* and upwards enabled the *Litunga* to enforce sustainable management of these biological resources. The introduction of central government control through parallel institutions was a source of conflict. As government failed to provide adequate control to resources, over-exploitation of the resources was the result.

CHAPTER 4 - THE BIODIVERITY STRATEGY AND ACTION PLAN (BSAP) PROCESS

A. Why BSAP?

4.1 The Zambian BSAP is a national document initiated by the Government in the light of salient provisions of the CBD. By ratifying the CBD, Zambia has committed herself to fulfilling its objectives and recognises that a BSAP is necessary in order to guide the country's future activities intended to achieve the objectives of the CBD.

The Planning Phases

4.2 At the time of the preparation of the BSAP, Zambia had a poor database on her biodiversity resources. It was therefore found necessary to have an initial planning cycle for the first Action Plan of five years. The plan can therefore be revised at the end of the five-year implementation period.

4.3 The planning tools for biodiversity conservation through a National BSAP process consisted of three cyclical steps. These were:

- The Country Study which helped to prepare inventories, assess values and threats, and provided an overview of the status of and trends in the biological diversity of the country.

- The National Strategy which was derived from the country study and is a proposal for action and investment programmes.

- The Action Plan which spells out steps for the implementation of the strategy and monitoring of the implementation process.

4.4 The process also involved a series of workshops for stakeholders at each of the above steps in order to obtain their input into the process and mobilise commitment for the implementation of the strategy and action plan.

4.5 **The country study.** The country study was undertaken in the Zambian process primarily as a desktop activity that started with stocktaking and assessment based on literature review and in some cases visits to museums, herbaria and research institutions within the country. The objective was to list all species of organisms that have been documented in literature, herbaria and museums and also assess values and uses of, and threats to biodiversity and to provide an overview of the status of and trends in the use, management and conservation of Zambia's biological diversity. This activity was undertaken from April to September 1998. The country study under the auspices of the BSAP did not, however, include biotechnology assessment as this was being handled under a parallel process whose aim was to put in place a national biosafety framework.

4.6 ***Stocktaking and Assessment.*** Under the stocktaking and assessment phase of the country study, information gathered and analysed included the biodiversity within the country and definition of conservation priorities. Further, the identification and assessment of the threats to this biodiversity and of the causes of these threats was undertaken. Apart from looking at the components of biodiversity, the stocktaking phase also assessed the legal, policy and institutional framework governing the use and conservation of biological resources within the country.

4.7 The scope of stocktaking activities was defined so as to provide a basis for the subsequent formulation of strategies and action plans. This was done in order to reationalize on information required and avoid wasted efforts and resources. The weakness of the stocktaking exercise was the exclusion of biotechnology and biosafety risk assessment and management in the assessment. Further, the assessment of the sustainability of the present use of biological resources was not adequately undertaken whilst definition of conservation priorities became a daunting task because of inadequate information.

4.8 ***The Ecosystem Approach.*** In considering the approach to use, the ecosystems approach was selected because of a number of reasons prime of which are: biodiversity issues and components cut across sectors and its ability to capture synergies and contradictions occurring across sectors. The ecosystem approach was used in the assessment of the country's biodiversity, except for fish and agri-biodiversity resources (see below). To operationalize the approach, the country was divided into one degree squares or grids. Identification of ecosystems was based on vegetation types which have been mapped at 1:500,000 (Edmonds, 1976). For each degree square, the number of vegetation-based ecosystems present and the dominant ecosystem were recorded. Based on appropriate distributional data, the number of species for each major group of organisms in each degree square was recorded and species richness assessed by degree square, dominant ecosystem and diversity of ecosystems. This approach made it possible to carry out a comparative analysis of biodiversity among ecosystems while allowing the determination of species endemism at the ecosystem level.

4.9 Fish diversity was assessed on the basis of the major fisheries and river basins (see Figure 1) while the assessment of agro-biodiversity was based on agro-ecological zones. There are three main agro-ecological regions in Zambia (see Map 4, Box 2) and within each region a number of farming systems have been identified. A comparative analysis of agro-biodiversity was made by agro-ecological zones.

4.10 **Strategy Formulation.** The purpose of this phase of the BSAP process was to define immediate management objectives within the goal of conserving Zambia's biodiversity. Arriving at the strategies entailed identifying a range of possible options for achieving the objective followed by analysis of advantages and disadvantages of each option and finally choosing the best option for incorporation into the national strategy.

4.11 Although the planning team initially drafted the objectives, these were presented to a wider audience of other stakeholders in order to reach consensus on them and the accompanying strategies. This was done at the second national workshop. The process that would otherwise have been very complex to handle was assisted by the fact that the planning team and Steering Committee members were trained in options and analysis by a United

Nations Development Programme (UNDP)/Global Environmental Facility (GEF) Specialist just before going into strategy formulation.

4.12 **Action Plan Development.** Once the strategies and objectives had been agreed upon, the next step entailed their translation into a set of specific actions to be carried out by specific institutions over a given period. Preparation of the action plans were undertaken by the planning team but with the consultation of identified potential implementing agencies or partners.

4.13 For practical reasons, the action plan covered a period of five years after which strategies and actions would be revised.

B. Stakeholder Consultations and Consensus Building

4.14 Stakeholder consultations and consensus building were done through National and Provincial Workshops based on multisectoral and participatory involvement methods.

4.15 The main objective of the stakeholder consultations was to create awareness and involve a range of groups of people and individuals in identifying issues, problems and opportunities for the conservation of the biological diversity. Key stakeholders who participated in the workshops included Traditional Leaders representing local communities, Non-Governmental Organisations (NGOs), the private sectors and high level Government Officials (Permanent Secretaries and Directors) and technical officers representing key line Ministries.

4.16 Stakeholder consultations involved three national and seven provincial workshops. National workshops were held in September 1997, August 1998 and April 1999. The provincial workshops were held during September and October 1998. The purpose of the three national workshops were, respectively, to (i) raise awareness among the stakeholders on the CBD, launch the process of formulating a national BSAP and reach consensus on the approach to be taken in the process; (ii) review and give an input into the country study report and (iii) to review the draft national BSAP and attempt to reach a consensus on priorities of strategies and action plans.

4.17 The provincial workshops were undertaken in between the second and third national workshops with the main aim of further enriching and filling the gaps in the country study reports and building consensus on the issues from the local perspective.

4.18 Stakeholder consultations and consensus building was further enriched by a national level Steering Committee under the leadership of MENR, with the following membership:- Planning and Information Department and Forestry Department of MENR, ECZ, Soils and Crops Research Branch and Fisheries Departments of MAFF, Department of NPWS, National Institute of Scientific and Industrial Research, University of Zambia, SADC Plant Genetic Resources Centre, IUCN - The World Conservation Union, Wildlife and Environment Conservation Society of Zambia. The Steering Committee's main responsibility was to provide policy guidance and backstopping to the process. The secretariat to the Committee was the Planning and Information Department of MENR.

4.19 The BSAP process greatly benefited from the technical backstopping of the IUCN Zambia country office which was contracted by MENR. Further support was rendered by IUCN by Regional office for Southern Africa. IUCN, in turn, hired a diverse range of National consultants for the country study and for the preparation of the strategy and action plan. As implementing agency for GEF, UNDP administered the disbursement of funds, furnished relevant international documents as well as providing a UNDP/GEF BSAP specialist for the training of local staff involved in the process.

C. Outputs of the National BSAP Process

4.20 **Training of Key Players.** IUCN's core planning team of five professionals, members of the Steering Committee and some MENR staff underwent a 3-day '**Options and Analysis' Training** given by a UNDP/GEF BSAP Specialist. The training was viewed as being relevant and useful to the BSAP formulation process as it meant to assist Zambia in preparing the BSAP document in line with CBD/Conference of Parties and GEF expectations.

4.21 **Awareness.** The BSAP process assisted in disseminating information on biodiversity and its related environmental issues and by so doing contributed to the raising of awareness at all levels. Even though the term "biodiversity" has no proper matching local term, it was clear from the provincial workshops that were attended by local communities that the process represented a holistic approach of addressing issues that affect mostly rural dwellers. It was not surprising, therefore, for participants to immediately demand implementation of actions.

4.22 **Enhanced Coordination.** As it is clear from the analysis of the legal, policy and institutional aspects of biodiversity management, biodiversity is a cross-sectoral subject. Although MENR is charged with the responsibility of coordinating biodiversity and other environment and natural resources matters, in practice this is a daunting task. However, through the BSAP Steering Committee it was possible to bring together key stakeholders and encourage them to think beyond their sectors towards a common cross-sectoral goal. In this way the process has enhanced the coordination capacity of MENR.

4.23 **Information Generation.** The country study focussed on providing baseline information on the biodiversity status in Zambia. The study included assessment of values and uses of, and threats to biodiversity. Through this process, tremendous amount of information has been generated. This information will contribute to the enhancement of biodiversity management in the country.

4.24 The following were the topical areas covered by the stocktaking and assessment phase of the Country Study:

(i) The Biodiversity of micro-organisms

(ii) The Biodiversity of Botanical and forest reserves

(iii) Agro-biodiversity including socio-economic aspects

(iv) The Cultural aspects of biodiversity

(v) The Biodiversity of invertebrates

(vi) The biodiversity of vertebrates (fish, birds and mammals)

(vii) The Biodiversity of lower plants

(viii) The Legal, policy and institutional issues affecting biodiversity.

(ix) The overall socio-economic Status and Trends of biodiversity conservation.

D. Assumptions and constraints

4.25 Zambia has had experience of preparing strategies before. However, most of them are of a sectoral nature and do not require enormous information as the case is with the BSAP. A number of limitations were experienced as elaborated below.

4.26 **Limited Time.** According to the original workplan, the whole process for the preparation of the BSAP funding was supposed to take one year, the country study six-weeks. This was a gross under-estimation of time (and subsequently, funds) required to undertake the process given the dearth of information and the need for a participatory and transparent process. This presented a major constraint in the preparation of comprehensive inventories of the country's biodiversity.

4.27 **Ecosystem Approach.** From the beginning of the process it was agreed to use the ecosystem approach in the stocktaking and assessment phase. However, most of the available distributional data on biodiversity are given by political or administrative regions, such as districts and provinces. In some cases the terms widespread or occurring throughout the province or country are used to describe species distribution. Such distributional information was extremely difficult to use in the country study which adopted an ecosystem and degree square approach. An attempt was made to give degree square equivalents of districts, but this was in most cases very approximate.

4.28 **Outdated Information.** In spite of recent advances in taxonomic knowledge of different groups of organisms, some of the literature reviewed were published several decades ago. Thus recent changes in species names and status may not have been checked in all the cases due to time constraint.

4.29 **Scanty Biosafety Information.** The parallel approach adopted meant that the assessment of biotechnology and risk management of biosafety was coordinated outside the rest of the BSAP process. At the time when this information was required to assist in the formulation of strategies, it was not readily available. This meant that the biosafety goals, strategies and objectives were formulated on a weak assessment base.

4.30 Nevertheless, this Strategy and Action Plan represents the first national attempt to respond to the requirements of the CBD. Setting up of priorities has therefore taken into account these shortcomings, especially the need to have up-to-date inventories in well-managed databases. It forms a good basis for integrating biodiversity conservation and management in current and future policies, programmes and plans. The document can further be improved immediately after the first five years of implementation given that a number of activities would be focussed towards generating the missing data.

CHAPTER 5 - UNMET NEEDS FOR BIODIVERSITY CONSERVATION IN ZAMBIA

5.1 The foregoing chapter discusses the current status of biological resources in Zambia. Zambia has sixteen ecosystems, which support an estimated 8017 species of flora and fauna. Wise use of these ecosystems and the biological resources found therein offers great potential for benefiting the country's people. However, biodiversity is threatened by a number of factors among them being land clearing for agricultural and other land uses, over-harvesting of natural resources and encroachment of protected areas. There are a number of other institutional, legal and policy issues that limit the conservation, sustainable use and equitable sharing of benefits. A number of unmet needs that form the basis for taking action can, therefore, be identified.

5.2 The following are the six agreed priority unmet needs for biodiversity management arising from the preceding chapters;

a) conserve ecosystems and protected areas
b) sustainably use and manage biological resources
c) equitably share benefits arising from utilisation of biodiversity
d) conserve crop and livestock genetic diversity
e) provide an appropriate legal and institutional framework and the needed human resources to deal with biosafety
f) provide an appropriate legal and institutional framework and human resources to implement biodiversity programmes

5.3 The justification for these needs in form of problems and causes are given in Table 3.

Table 3: Analysis of Unmet Needs

UNMET NEEDS	PROBLEM AREAS	CAUSES
1. Conserve ecosystems and protected areas	1.1 The status of protected areas and their ecosystems is not adequately known	1.1.1 Lack of up-to-date inventories of ecosystems, land cover and use
	1.2 Not all the ecosystems are well represented in the protected area network	1.2.1 Inadequate criteria and guidelines for Establishment of protected areas
	1.3 Inadequate protection to protected areas	1.3.1 Disputes over boundaries of some protected areas
		1.3.2 Lack and/or inadequate control of destructive activities, such as mining, wood harvesting, fishing and illegal hunting
		1.3.3 Inadequate infrastructure for eco-tourism and law enforcement
		1.3.4 Human encroachment through settlement and agriculture
		1.3.5 Inadequate environmental and Biodiversity conservation awareness among the stakeholders

UNMET NEEDS	PROBLEM AREAS	CAUSES
2. Sustainably use and manage biodiversity	2.1 Biological resources not sustainably used	2.1.1 Overexploitation and human encroachment in gazetted Areas
		2.1.2 Unregulated harvesting of resources
		2.1.3 Lack of exclusive rights over resources by local communities
		2.1.4 Legal harvesting quotas that are not related to stocks and sustainable yields
		2.1.5 Lack of knowledge on sustainable yields of biological resources
		2.1.6 Laws that disregard local communities as legitimate users and custodians of biodiversity
	2.2 Biological resources not sustainably managed	2.2.1 Inadequate involvement of local communities, NGOs and the private sector in resource management
		2.2.2 Lack of incentives to manage biological resources
		2.2.3 State monopoly in the management of biological resources
		2.2.4 Lack of empowerment of local communities over resources occurring in their localities
	2.3 Weak local community involvement in natural resources management	2.3.1 Exclusion of land users from land use planning and control over biological resources
		2.3.2 Broken down traditional institutions For community biodiversity management

		2.3.3 Lack of appropriate recognition of Chiefs and other traditional rulers as custodians of traditional land and biodiversity
		2.3.4 Inadequate participation of local communities in the management of natural resources and policy formulation
		2.3.5 Lack of recognition of the need to observe customary values as critical aspects of the success of (CBNRM)
	2.4 Stocks of biological resources and their dynamics not adequately known	2.4.1 Out-dated data on stocks of biological resources
		2.4.2 Lack of monitoring of biological resources
		2.4.3 Inadequate funding by government to natural resources research institutes in the country

UNMET NEEDS	PROBLEM AREAS	CAUSES
3. Equitably share benefits arising from the utilization of biodiversity	3.1 Inadequate provision and protection of community rights to manage and use biological resources	3.1.1 Lack of a legal framework for the creation and protection of community's rights over biological resources
		3.1.2 Lack of strong community based natural resources management institutions to promote rights of communities through negotiations
	3.2 Equitable sharing of benefits from use of biological resources absent or unbalanced	3.2.1 Inadequate sharing of benefits between government and local communities, urban and rural residents, women and men and national and international organisations
		3.2.2 Inadequate consultations between government and local communities
		3.2.3 Centralised benefit sharing mechanisms that lack transparency and negotiations by all stakeholders
		3.2.4 Absence of legal and administrative framework for equitable sharing of benefits from use of biological resources at national and international levels
		3.2.5 Unequal terms of trade in biodiversity products between nations

UNMET NEEDS	PROBLEM AREAS	CAUSES
4. Conserve crop and livestock genetic diversity	4.1 Traditional crop varieties not adequately conserved	4.1.1 Introduction of improved varieties that replace traditional crop varieties
		4.1.2 Inadequate promotion of drought resistant crop varieties
		4.1.3 Inadequate promotion of disease resistant crop varieties
		4.1.4 Inadequate information on the genetic status of local crops and their related wild species
		4.1.5 Poor representation of vegetatively propagated crops in the existing gene bank collections
		4.1.6 Inadequate and poorly funded/ managed gene banks, museums
	4.2 Wild relatives of crops insufficiently surveyed and conserved	4.2.1 Ecosystem and habitat degradation
		4.2.2 Uncontrolled land clearing
	4.3 Traditional livestock breeds and genetic diversity not adequately conserved	4.3.1 Lack of measures for the conservation of traditional livestock genetic diversity
	4.4 On-farm conservation of crop and livestock genetic resources poorly understood and documented	4.4.1 Lack of surveys and analysis of on-farm conservation practices
		4.4.2 Inadequate incentives to traditional farmers and local communities for on-farm conservation
	4.5 Collection, exchange and transfer of crop genetic resources not adequately controlled	4.5.1 Lack of legislation on access and transfer of crop genetic resources

UNMET NEEDS	PROBLEM AREAS	CAUSES
5. Provide an appropriate legal and institutional framework and the needed human resources to deal with bio-safety	5.1 Lack of mechanisms to address the threats of Genetically Modified Organisms (GMOs)	5.1.1 Lack of comprehensive legislation to address bio-safety issues
		5.1.2 Lack of expertise in GMO risk assessment
		5.1.3 Unidentified institutional arrangement
		5.1.4 Inadequate implementation of sectoral laws on psytosanitary
	5.2 Insufficient knowledge of biotechnology	5.2.1 Inadequate trained human resources in biotechnology
		5.2.2 Lack of guidelines for safe use of biotechnology
		5.2.3 Inadequate funding by Government and Industry for biotechnology research
		5.2.4 Lack of public awareness on bio-technology issues

UNMET NEEDS	PROBLEM AREAS	CAUSES
6. Provide an appropriate legal and institutional framework and human resources to implement programmes for biodiversity conservation	6.1 Institutions dealing with biodiversity management inadequately coordinated and weak community participation in the management of biological resources	6.1.1 Sector-based management of biological resources
		6.1.2 Uneven representation of local community interests in decision making structures of community based natural resources management projects
		6.1.3 Lack of representation of local community interests in government structures responsible for decision making concerning the distribution of benefits from use of biological resources
	6.2. Lack of co-operation between government agencies and local communities in the management of biological resources	6.2.1 Conflict between statutory and customary rights governing the use of biological resources
	6.3 Insufficient knowledge about biodiversity	6.3.1 Lack of widespread knowledge of community based natural resources management programmes
		6.3.2 Inadequate trained human resources in biodiversity management and taxanomy.
		6.3.4 Lack of guidelines for biodiversity assessment

CHAPTER 6 - GOALS, OBJECTIVES, STRATEGIES AND ACTIONS

A. Vision, Mission and Guiding Principle

6.1 Zambia's biodiversity vision is *'to have a progressive and enlightened nation, whose people value and equitably derive sustenance and prosperity from the sustainable management and use of its rich biological resources'*. The mission of Government is therefore, that through the National BSAP and other country driven initiatives, the country will endeavour *'to establish legal, policy and institutional frameworks and mechanisms that promote the conservation, management and sustainable use of Zambia's biological resources and the equitable sharing of benefits from the use of these resources by all sectors of the population'*. To do this, Zambia is inspired by the following guiding principles, upon which the National BSAP is hence founded:

i. Biodiversity is a manifestation of the totality of the nation's natural and cultural heritage that requires to be understood, appreciated and used sustainably.

ii. Protection, conservation and sustainable utilisation of biodiversity are a responsibility of every citizen of Zambia.

iii. All Zambians depend on biodiversity, should share responsibility for managing biological resources sustainably, and should benefit equitably from the use of biodiversity.

iv. All Zambians should be encouraged to participate in decisions involving the use of our biophysical resources, including air, water, land, plants and animals.

v. Biodiversity has ecological, economic, social, cultural and intrinsic values.

vi. Coexistence with other life forms is essential for the long-term survival and prosperity of human kind and protection of healthy and evolving natural ecosystems is necessary for the perpetual coexistence of all life forms.

vii. Scientific and indigenous knowledge should contribute to sustainable management and use of biological resources and such knowledge, innovations and practices about biodiversity should be respected, protected and supported.

viii. Implementation of biodiversity management programs should take into account the ecological, economic, social and cultural values of biodiversity.

ix. Multisectoral co-operation for the planning and management of biodiversity is essential to the implementation of the strategy.

x. Ex-situ measures should complement in-situ conservation of biodiversity, especially for species and populations that are threatened by extinction and those modified by man to meet social, cultural, scientific and economic needs.

xi. The conservation of biodiversity and sustainable use of biological resources requires local, provincial, national and international co-operation and a sharing of knowledge, costs and benefits of biodiversity management.

xii. The BSAP should be reviewed every five years so as to evaluate its performance.

B. Goals

6.2 Given the foregoing background, the challenge facing Zambia is to conserve biological diversity and to use its components for sustainable human development. Six strategic goals with objectives, strategies and actions have been arrived at based on the synthesis and analysis of the results of the stocktaking assessment of the present situation, the stakeholder consultations (national and provincial workshops), guiding principles and the CBD objectives and are presented in the following section: More elaborate details of these goals, objectives, strategies and actions are given in a logframe matrix in Annex I.

Goal 1: Ensure the conservation of a full range of Zambia's natural ecosystems through a network of protected areas of viable size.

This goal will be achieved through three objectives, which are defined below:

Goal 1: Objective 1: To assess the coverage of Zambia's ecosystems in the existing protected areas network in order to ensure inclusion of all of Zambia's major ecosystems.

Outcome: Report on the adequacy of the coverage of the existing protected areas network and identification of unprotected areas that need to be gazetted as PAs.

Strategy: To carry out a gap analysis and to up-date maps of all the remaining natural ecosystems of Zambia.

Activities:

i. Reviewing existing information on protected areas using remote sensing surveys.

ii. Acquiring satellite imagery and aerial photos and commissioning new aerial surveys.

iii. Conducting ground surveys and Compiling new maps

iv. Identifying gaps and overlaps

Goal 1: Objective 2: To modify the existing protected areas network to include representative areas of viable size of all of Zambia's major ecosystems.

Outcome: New areas for inclusion in the protected areas network

identified and new protected areas gazetted.

Strategy: To address this objective an ecosystem approach will be used to assess the present status and trend of the country's biodiversity and to re-orientate the criteria for identifying representative areas to be gazetted as protected areas.

Activity:

i. Developing criteria for establishing new protected areas that clearly allows and defines levels of permissible use

Goal 1 objective 3: To enhance the effective participation of stakeholders in the management of the Protected Area (PA) network.

Outcome: Local and broad participation in the protection and management of the PA network in place.

Strategy: Involve all key stakeholders in the management and protection of the PAs through the development of appropriate structures

Activities:

i. Reviewing existing models of participatory management systems.

ii. Designing and implementing participatory management models/systems and the incentive schemes therein.

Goal 2: Conservation of the genetic diversity of Zambia's crops and livestock.

The following three objectives for addressing the above goal have been identified:

Goal 2 Objective 1: To conserve the genetic diversity of traditional crop varieties and their wild relatives.

Outcome: Genetic diversity of traditional crop varieties and their wild relatives conserved.

Strategy 1: Assess the current status and distribution of traditional crop varieties and their wild relatives identify threats affecting them and conserve through ex-situ and in-situ approaches to cover the widest possible genetic diversity existing in the country.

Activities:

i. Conducting a field survey to determine the distribution and availability of traditional crop varieties and their wild relatives.

ii. Identifying threats to traditional crop varieties.

iii. Developing a database on available crop genetic diversity and their wild relatives.

iv. Setting priorities and determining strategies for the conservation of crop genetic resources and their wild relatives.

Strategy II: Improve the ex-situ conservation of existing collections through effective management and strengthening of existing facilities.

Activities:

i. Reviewing and improving the monitoring system of seed samples maintained in the gene bank.

ii. Regenerating seed samples maintained in the gene bank.

iii. Establishing field gene bank and in-vitro facilities to conserve the genetic diversity of vegetatively propagated crops.

iv. Establishing duplicate safety ex-situ collection outside the country.

v. Constructing and furnishing a gene bank building.

Strategy III: Develop and implement on-farm/in-situ conservation measures to conserve the traditional crop genetic diversity and their wild relatives through the assessment of both traditional and modern farming practices.

Activities:

i. Conducting surveys of traditional farming systems and documenting local knowledge and practices on the conservation and use of traditional crop varieties.

ii. Promoting the use of sustainable traditional and modern farming practices

iii. Creating awareness among farmers on the value of local agro biodiversity

iv. Designing and conducting an on-farm conservation pilot project.

Goal 2 Objective 2: To conserve the genetic diversity of traditional livestock breeds.

Outcome: The conservation of genetic diversity of traditional livestock breeds.

Strategy: Assess the status of, and inventorise the traditional livestock genetic diversity and develop appropriate conservation measures.

Activities:

i. Conducting an inventory and assessing the genetic diversity and conservation status of all livestock in the country.

ii. Creating database for livestock genetic resources.

iii. Designing and implementing strategies for the conservation of livestock genetic resources.

Goal 3: Improve the legal and institutional framework and human resources to implement the strategies for conservation of biodiversity, sustainable use and equitable sharing of benefits from biodiversity.

This goal was arrived at as a cross-cutting after noting that for purposes of sustainable use of biological resources, the co-operation among stakeholders was inadequate and that there was no networking between various sectors.

Goal 3 Objective 1 To strengthen and develop appropriate legal and institutional frameworks for the management of biodiversity in Zambia's PAs.

Outcome: Establishment of enabling institutional and legal framework for sustainable biodiversity management.

Strategy : Reviewing the structures and operations of all institutions involved in the management of biodiversity.

Activity:

i. Assessing existing frameworks and developing appropriate legal and institutional frameworks and human resource capacity.

Goal 3 Objective 2: To develop a co-ordination mechanism among institutions responsible for biodiversity management.

Outcome: The establishment and implementation of a co-ordination mechanism among institutions responsible for biodiversity management.

Strategy: Effective co-ordination of biodiversity activities and the development of effective institutions at all levels.

Activities:

i. Strengthening the capacity of the MENR to co-ordinate biodiversity management.

ii. Establishing an inter-institutional consultative forum.

Goal 3 Objective 3: To improve Biodiversity knowledge in Zambia.

Outcome: Increased knowledge of biodiversity among the stakeholders.

Strategy: Expand the understanding, the conservation of biodiversity and its sustainable use through research, training and information dissemination.

Activities:

i. Developing guidelines for biodiversity assessment.

ii. Conducting systematic assessment of biodiversity in all ecosystems with particular emphasis to areas outside the protected areas.

iii. Documenting scientific and indigenous knowledge about biodiversity.

iv. Training taxonomists in various key fields of biological resources.

v. Providing positions and facilities for taxonomical work in various key fields of biological resources.

vi. Disseminating knowledge about biodiversity.

Goal 4: Sustainable use and Management of Biological Resources.

To attain the above goal, two objectives and their related strategies and activities have been identified as follows: -

Goal 4 Objective 1: To develop and implement local management systems that promote sustainable use of biological resources.

Outcome: The establishment of management systems that promote sustainable use of biological resources and their implementation.

Strategy I: Creation/development of new and improvement of existing local management systems.

Activity:

- Revising, creating and strengthening local management committees.

Strategy II: Establishment of CBNRM programmes that will include all aspects of biological resources, drawing on the experiences gained from the ADMADE and similar management systems for wildlife, which involve local communities.

Activities:

i. Reviewing existing CBNRM programmes

ii. Establishing new CBNRM programmes and strengthening existing ones.

iii. Conducting exchange visits and open field days

Strategy III: Designing of incentive schemes, which will apply to all aspects of biological resources and stakeholders.

Activity:

i. Conducting intersectoral, participatory and consensus building workshops for stakeholders.

Goal 4 Objective 2: To establish the sustainable maximum yields of biological resources and design and implement a system of monitoring their utilization and management.

Outcome: An established and fully functional monitoring system.

Strategy: Gathering of information/data for determining the maximum sustainable yields and establishing a monitoring system for biological resources.

Activities:

i. Carrying out literature review and desktop research.

ii. Carrying out field studies.

iii. Conducting consultations with relevant stakeholders.

Documentation and dissemination of agreed optimal use and monitoring guidelines.

Goal 5: Develop an appropriate legal and institutional framework and the needed human resources to minimise the risks of GMOs.

Goal 5 Objective 1: To establish an appropriate institutional framework for bio-safety.

Outcome: Appropriate institutional framework for bio-safety established.

Strategy: Using experiences gained in other countries.

Activities:

i. Reviewing existing structures, mandates and linkages.

ii. Attending international seminars, study tours and scientific exchange visits.

iii. Equipping the established institutions with the required capital endowment for handling bio-safety matters.

Goal 5 Objective 2: To develop adequate human resources for bio-safety.

Outcome: Adequate human resources for bio-safety are developed and put in place.

Strategy: Training human resources from all relevant institutions in risk assessment and management, learning and adapting from experiences of other countries and raising awareness in bio-safety among stakeholders.

Activities:

i. Training Human resources in risk assessment and management

ii. Learning and adapting from experiences of other countries

iii. Carrying out sensitization/awareness campaigns.

Goal 6: Ensure the equitable sharing of benefits from the use of Zambia's biological resources.

Goal6 Objective 1: To develop and adopt a legal and institutional framework, which will ensure that benefits are shared equitably.

Outcome: Equitable sharing of benefits.

Strategy I: The current legislation will be revised to provide for the equitable sharing of benefits. Relevant existing legal frameworks in other countries providing for equitable sharing of benefits will be studied and where applicable adapted to the local situation.

Activities:

i. Reviewing and amending existing legislative provisions for equitable sharing of benefits from natural resources such as fisheries, forest and wildlife.

ii. Improving capacity in Government to effectively negotiate for equitable sharing of benefits at international level.

Strategy II: Develop a legal and institutional framework by reviewing existing legislation and strengthening the enforcement of the necessary provisions relevant for ensuring equitable benefit sharing.

Activity:

i. Developing capacities (understanding and mechanisms) for implementing institutions to enforce new and existing legislation on equitable sharing of benefits from natural resources.

Goal 6: Objective 2: To create and strengthen community based natural resources management institutions.

Outcome: The effective management and utilisation of natural resources by traditional establishments and local communities.

Strategy: The use of experiences gained from existing community based resources management schemes in the country and outside the country. Capacity building within local institutions will be done by providing education in natural resources management and utilisation and creation of awareness on the value of natural resources for all beneficiaries.

CHAPTER 7 - PROJECT IMPLEMENTATION ARRANGEMENTS

7.1 The national BSAP process recognises that the environment portfolio in Zambia is largely a responsibility of the Ministry of Environment and Natural Resources which works in close collaboration with the Environmental Council of Zambia, the Ministry of Tourism's Department NPWS, the MAFF and NGOs active in the same sector.

7.2 The allocation of responsibilities to implement components of the BSAP has therefore recognised the specific roles which these other sectoral ministries and organisations are best suited to undertake given the comparative advantage they enjoy through their specific mandates and specializations.

7.3 In view of the multidisciplinary nature of the BSAP programme, implementation of the programme shall be guided by the same National Steering Committee which guided the national BSAP preparation process. The Steering Committee includes those key stakeholders who will be responding to the emerging issues and work to fill the gaps identified in chapter 3.0 of this document.

7.4 The MENR will play a co-ordinating role of ensuring the integration of the activities of all the line ministries. The Ministry will establish a full-time project secretariat, which will receive, and process project proposals from stakeholders and shall prepare an appropriate programme for regular monitoring of project performance.

7.5 The MENR shall, regularly consult with the line ministries in implementing specific components of the programme. For example the Ministry of Legal Affairs (MLA) on legal and institutional matters; MOT on wildlife management and tourism; MAFF on fisheries and agricultural biodiversity; and Ministry of Science and Technology over bio-safety issues, and Ministry of Local Government and Housing (MLGH) over local community involvement in conservation and management of the biodiversity.

7.6 The MENR will also empower the local communities, NGOs and private sector organisations to identify and implement components of the programme in which they have demonstrated capacity and comparative advantage.

7.7 Monitoring of BSAP implementation will be carried out regularly by a multidisciplinary team lead by MENR for progress of specific activities, strategies, objectives and sub-goals. The BSAP will also be monitored for attainment of the overall objective which is the conservation and sustainable use of Zambia's biodiversity.

7.8 **Indicators of Progress.** The monitoring of verifiable indicators shown in 3.0 against each objective will focus on assessment of progress made towards the achievement of each objective and will be carried out jointly by the responsible agencies. This aspect of monitoring will be a continuos activity whose main objective will be self monitoring and evaluation aimed at maintaining and improving project performance. The responsible agencies will report on project progress regularly to the National Steering Committee.

7.9 The specific objectives and implementation modalities of progress monitoring will be developed by the responsible executing agencies assisted by technical experts from NGOs and local private sector agencies.

Biodiversity Monitoring

7.10 The ultimate goal of the BSAP is to conserve and use the country's biodiversity sustainably. In this regard, it is essential that an appropriate programme be put in place for the monitoring and evaluation of the general trends in Zambia's biodiversity.

7.11 It is suggested here that the MENR considers implementing a project in collaboration with IUCN and ECZ on biodiversity/sustainability M and E using an articulated systems assessment method. The BSAP monitoring programme for Zambia will take cognisance of similar programmes taking place in the region such as the Lake Tanganyika Regional Biodiversity Project, the SADC Regional Biodiversity Programme, the Zambezi Basin Wetlands Conservation and Resource Utilisation Project and the Lake Tanganyika Regional Biodiversity Project.

7.12 The monitoring of Zambia's biodiversity trends will also take into consideration on-going national projects including but not restricted to the following:

- ZFAP
- PFAP
- ESP
- Water Sector Reforms Programme, and;
- ASIP

Programme Evaluation

7.13 The programme shall be evaluated twice during the five year period. The first evaluation which is the mid-term evaluation will be carried out 2½ years from start of implementation. This evaluation will assess project performance mid way will also assist to refocus the strategies and activities of the programme during the remainder of the first five years of the project. The second evaluation of the project will take place during the last three months of the fifth year of the programme.

7.14 The second evaluation will assess the impact of the programme on the overall objective of the programme which is to conserve and sustainably use Zambia's biodiversity. Both evaluation exercises will be carried out by a multidisciplinary team of local professionals backed by experts from IUCN, SADC Regional Project and UNDP/GEF.

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Annex I

PROGRAMME LOGICAL FRAMEWORK

GOAL 1: Ensure the conservation of a full range of Zambia's natural ecosystem through a network of protected areas of viable size

Objectives	Expected Outcome	Strategy	Activities	Verifiable Indicators	Time frame	Responsible Agencies	Assumptions
1. To assess the coverage of Zambia's ecosystems in the existing protected areas network in order to ensure the inclusion of all of Zambia's major ecosystems.	Report on the adequacy of the coverage of the existing protected areas net work and identification of unprotected areas that need to be gazetted as PAs	Carrying out a gap analysis and to up-date maps of all the remaining natural ecosystems of Zambia.	1. Reviewing existing information on protected areas using remote sensing surveys.	Availability of up dated data on current status of protected areas and particular species	12 months	MENR/ECZ, MOL, Traditional rulers and NGOs	Sufficient funds will be secured in time and human resource capacity is available locally
			2 Acquiring satellite imagery and aerial photos and commissioning new aerial surveys.	Availability of up dated imagery and aerial photos	12 months	MENR/ECZ, MOL, MAFF, MOT, Traditional rulers, local communities and NGOs	
			3 Conducting ground surveys and compiling new maps.	Availability of a comprehensive national map on land cover and use and protected areas	24 months		
			1. Identifying gaps and overlaps	Availability of a report on unprotected areas	6 months		
2. To modify existing protected areas network to include representative areas of viable size of all of Zambia's major ecosystems	New areas for inclusion in the protected areas network identified and gazetted	Assess the present status and trends of the country's biodiversity and re-orient the criteria for identifying representative areas to be gazetted as protected areas.	1. Developing criteria for establishing new protected areas that clearly allows and defines levels of permissible use.	Availability of a report on the distribution and status of protected areas	6 months	MENR, MLA, MAFF, MEWD, Traditional rulers and local communities	Capacity is available locally or can be sourced internationary
3. To enhance the effective participation of stakeholders in the management of the PA network	Local and broad participation in the protection and management of the PA network in place	Involve all key stakeholders in the management and protection of the PAs through the development of appropriate structures.	1. Reviewing existing models of participatory management systems.	Availability of clear guidelines on the system of participation in the management of PA networks	60 months	MENR, MOT, MLA,MLGH, NGOs, CBOs, Traditional rulers and local communities and	A supportive legal and institutional framework is in place
			2. Designing and implementing with communities, participatory management models/systems and the incentive schemes therein	Appropriate participatory management models designed and available	36 months		

GOAL 2: Conservation of the genetic diversity of Zambia's crops and livestock

Objective	Expected output	Strategy	Activity	Verifiable Indicator	Time frame (Months)	Responsible Agency	Assumption
1. To conserve the genetic diversity of traditional crop varieties and their wild relatives.	The genetic diversity of traditional crop varieties and their wild relatives conserved	1. Assess the current status and distribution of traditional crop varieties and their wild relatives, identify threats affecting them and conserve them through ex-situ and in-situ approaches to cover the widest possible genetic diversity existing in the country	1. Conducting field surveys to determine the distribution and availability of traditional crop varieties and their wild relatives	Availability of data on status and distribution of traditional crop varieties and their wild relatives	12 months	**MAFF**, Traditional Rulers, and Local Communities NGOs, UNZA,	Stakeholders, government and donor commitment Assured
			2. Identifying threats to traditional crop varieties	Availability of data and information on the impact of threats to traditional crop varieties.	6	**MAFF** Traditional Rulers and Local Communities, NGOs, UNZA,	
			3. Developing a database on available crop genetic diversity and their wild relatives	Existence of a data base on available crop genetic diversity.	24	**MAFF** (Soils and crops research branch)	
			4. Set priorities and determine strategies for the conservation of crop genetic resources and their wild relatives	Number of conservation priorities and strategies put in place	12	**MAFF** ,Traditional Rulers and Local Communities, NGOs, UNZA	
		2. Improve the ex-situ conservation of existing collections through effective management and strengthening of existing facilities	1.Reviewing and improving the monitoring system of seed samples maintained in the genebank	Existence of an improved monitoring system for seed viability.	24	MAFF(Soils and Crops Research Branch UNZA(School of agric.)	Qualified staff available.
			2. Regenerating seed samples maintained in the genebank	Number of seed samples regenerated.	60	MAFF(Soils and Crops Research Branch UNZA(School of agric.)	The will to conserve exists in all key stakeholders.

Goal 2 continued

			3. Establishing field genebank and invitro facilities to conserve the genetic diversity of vegetatively propagated crops	Existence of field genebanks and invitro conservation facilities	60	**MAFF**(Soils and Crops Research Branch UNZA (School of agric.), Forestry Department	As above
			4. Establishing duplicate safety ex-situ collection outside the country.	Existence of duplicate ex-situ facility for Zambia's crop genetic resources outside the country	12	**MAFF** (Soils and Crops Research Branch).	
			5.Constructing and furnishing a genebank building	Existence of a new and furnished genebank building	24	MAFF(Soils and Crops Research Branch	Government and Donor commitment assured
		3.develop and implement on-farn/in-situ conservation measures to conserve the traditional crop genetic diversity and their wild relatives through the assessment and appropriate intervention in prevailing traditional and modern farming practices.	1. conducting surveys of traditional farming systems and documenting local knowledge and practices on the conservation and use of traditional crop varieties	Availability of information on the status of traditional farming systems and local practices and the impact on traditional crop varieties.	12	**MAFF** ,Traditional Rulers and Local Communities, NGOs, UNZA	Stakeholders cooperate
			2. Promoting the use of sustainable traditional and modern farming practices	Adoption of sustainable modern and traditional farming practices by majority of small scale farmers	60	**MAFF** (Soils and Crops Resaerch Branch and Field Services),Traditional Rulers and Local Communities, NGOs, UNZA	As above
			3.Creating awareness among farmers on value of agro-biodiversity	Increased awareness among traditional farmers on the value of agro-biodiversity conservation	60	**MAFF** (Soils and Crops Resaerch Branch and Field Services),Traditional Rulers and Local Communities, NGOs, UNZA	As above

			4. Designing and implementing an on-farm conservation pilot project	A pilot projects for on-farm conservation designed and implemented	36	**MAFF** (Soils and Crops Resaerch Branch and Field Services),Traditional Rulers and Local Communities, NGOs, UNZA	Qualified staff are available, Stakeholders cooperate
2. To conserve the genetic diversity of traditional livestock breeds	Genetic diversity of traditional livestock breeds conserved	Assess status of , and inventorise the traditional livestock genetic diversity and develop appropriate conservation measures.	1. Conducting an inventory and assessing the genetic diversity and conservation status of all livestock in the country	Availability of information on the status of the genetic diversity and of• conservation of traditional livestock breeds.	36	MAFF (Soils and Crops Resaerch Branch and Field Services),Traditional Rulers and Local Communities, NGOs, UNZA	Qualified staff are available, Stakeholders cooperate and Government commitment assured
			2. Creating database for livestock genetic resources	Existence of a database on traditional livestock	12	MAFF (Animal Production and Health Branch) and UNZA	As above
			3. Designing and implementing strategies for the conservation of livestock genetic resources	Strategies for the conservation of livestock genetic resources are developed and implemented	12	MAFF (Soils and Crops Resaerch Branch and Field Services),Traditional Rulers and Local Communities, NGOs, UNZA	As above

Goal 3: Improve the legal and institutional framework and human resources to implement the strategies for conservation, sustainable use and equitable sharing of benefits from biodiversity

Objectives	Expected Results	Strategies	Activities	Verifiable Indicators	Timeframe	Cost US Dollar	Responsible Agencies	Assumptions
1. To strengthen and develop legal and institutional frameworks for the management of biodiversity in Zambia's PAs	Establishment of enabling institutional and legal framework for sustainable biodiversity management	Reviewing the structures and operations of all major institutions involved in the management of biodiversity	1. Assessing existing frameworks and developing appropriate legal and institutional framework and human resource capacity.	Existence of institutions with clear mandates and well defined coordination mechanisms	12 months	200,000	▪ **MENR** ▪ MLA ▪ MLGH ▪ MAFF ▪ MOT ▪ Traditional Rulers ▪ Local communities ▪ NGOs ▪ Private Sector ▪ Universities	▪ Stakeholders will be willing to adopt an intersectoral and multidisciplinary approach to biodiversity management. ▪ Donors will render financial support to the reviewing , enactment and implementation of legislation in the key sectors dealing with biodiversity management.
2. To develop coordination mechanism among institutions responsible for biodiversity management	Establishment and implementation of a coordination mechanism among institutions responsible for biodiversity management	Effective co-ordination of biodiversity activities and the development of effective institutions al local community level	1. Strengthen the capacity of MENR to co-ordinate biodiversity management	▪ Existence of a functional focal point for co-ordinating biodiversity management	12 months	600,000.00	▪ **MENR** ▪ MLA ▪ MLGH ▪ MAFF ▪ MOT ▪ Traditional Rulers ▪ Local Communities ▪ NGOs ▪ CBOs ▪ Private Sector ▪ Universities	▪ Members of Parliament will support the bill to empower traditional rulers, local communities, CBOs and NGOs to regulate access to, and use of, biological resources.
			2 Establishing and inter-institutional consultative forum.	▪ Outputs from regular meetings among stakeholders that are implemented for improved biodiversity management.	60 months	600,000	▪ **MENR** ▪ Traditional Rulers ▪ Local Communities. ▪ NGOs ▪ CBOs ▪ Private Sector ▪ MAFF ▪ MOT ▪ Universities	▪ There will be training modules developed in local languages specific to the participating areas.
3. To improve biodiversity knowledge in Zambia	Increased knowledge of biodiversity among the stakeholders	1. Expand the understanding of the conservation biodiversity and its sustainable use through research, training and information dissemination.	1. Developing guidelines for biodiversity assessment	▪ Availability of guidelines for biodiversity assessment.	12 months	1,050,000.00	▪ **MENR** ▪ MOT ▪ MAFF ▪ MIB ▪ Universities ▪ NGOs	Local human capacity to develop guidelines for biodiversity assessment will be available, or, if not, overseas technical assistance will be sourced.
			2. Conducting systematic assessment of biodiversity in all ecosystems with particular emphasis to areas outside the protect areas.	▪ Availability of data on biodiversity in gazetted areas.	60 months	5,000,000.00	▪ **Forestry Dept,** ▪ Wildlife Authority ▪ Fisheries Department ▪ Univerisities ▪ NGOs	Staff trained in systematic assessment of biodiversity will be available.

			3. Documenting scientific and indigenous knowledge about biodiversity.	▪ Accessibility of scientific and indigenous knowledge of biodiversity to stakeholders	24 months	▪ **MENR** ▪ MOT ▪ MAFF ▪ MIB ▪ Universities ▪ NGOs ▪ Traditional Rulers ▪ Local Communities ▪	There will be willingness to work together between scientists and local people.
			4 Training taxonomists in varous key fields of biological resources.	▪ Availability of curriculum and courses in biodiversity management.	36 months	▪ **Universities** ▪ Colleges Private Sector MAFF MOT	Experts in biodiversity knowledge will be available
			2. Providing positions and facilities for taxonomical work in various key fields of biological resources	▪ Availability of equipment to facilitate taxonomical work.	36 months	▪ Universities Private Sector	Universities will offer courses in various key fields of biological diversity.
			6. Disseminating knowledge about biodiversity.	▪ Increased knowledge about biodiversity among the public translated into increased action for biodiversity management by the public.	48 months	▪ MENR MAFF MOT Universities	Budget allocations to MENR will increase. Donor s will support the procurement of equipment.

Goal 4: Sustainable use and management of biological resources

Objectives	Expected Results	Strategies	Activities	Verifiable Indicators	Timeframe	Responsible Agencies	Assumptions
1. To develop and implement local management systems that promote sustainable use of biological resources	The establishment of management systems that promote sustainable use of biological resources and their implementation	1. Creation/development of new and improvement of existing local management systems.	1. Revising, creating and strengthening local management committees	Existence of functional local management committees	24 months	▪ MENR ▪ MAFF ▪ MLGH ▪ MOT ▪ NGOs ▪ Private sector ▪ Traditional Rulers	Government will develop and implement a clearly defined decentralization policy framework
		2. Establishment of CBNRM programmes that will include all aspects of biological resources, drawing on experiences gained from ADMADE and similar management systems for wildlife which involve local communities.	1.Reviewing existing CBNRM programmes	Availability of information on the status of existing CBNRM programmes	24 Months	▪ MENR ▪ MAFF ▪ MLGH ▪ MOT ▪ NGOs ▪ Private sector ▪ Traditional Rulers	
			2. Establishing new CBNRM programmes and strengthening existing ones	Existence of established CBNRMs which effectively manage biological resources sustainably.	36 months	▪ MENR ▪ MOT ▪ MOLCH ▪ NGOs	
			3. Conduct exchange visits and open field days	Number of adaptations implemented by stakeholders arising from lessons learnt in the exchange visits.	12 months	▪ MENR ▪ MAFF ▪ MLGH ▪ MOT ▪ NGOs ▪ Private Sector ▪ Traditional Rulers	
		3. Designing of incentive schemes which will apply to all aspects of biological resources and stakeholders	Conducting intersectoral, participatory and consensus building workshops	Existence of incentive schemes that encourage biodiversity conservation by stakeholders.	12 months	▪ MENR ▪ Universities ▪ NGOs ▪ Private Consultants	Government will remain committed to implementation of the requirements of the CBD

Goal 4
Continued

2. To establish the sustainable maximum yield of biological resources and design and implement a system for monitoring their utilization and management.	An established and fully functional monitoring system	Gathering of information/data for determining the maximum sustainable yields and establishing a monitoring system for biological resources.	1. Carrying out literature review and desktop research	Availability of data/information and methodologies on how to establish sustainability.	12 months	▪ **MENR** ▪ MAFF ▪ MLGH ▪ MOT ▪ NGOs ▪ Private Sector ▪ Traditional Rulers	
			2. Carrying out field studies	Availability of data on the sustainable yield of biological resources.	12 months	▪	
			3. Conducting consultations with stakeholders	Availability of guidelines on optimal use and a system for monitoring guidelines.		▪ **MENR** ▪ MAFF ▪ MLGH ▪ MOT ▪ NGOs ▪ Private Sector ▪ Traditional Rulers	
			4. Documentation and dissemination of agreed standards and guidelines	Use of guidelines on biological resources, optimal utilization and monitoring by stakeholders.	12 months		

Goal 5: Develop an appropriate legal and institutional framework and the needed human resources to minimise the risks of the use of genetically modified organisms (GMOs)

Objective	Expected Result	Strategy	Activity	Verifiable Indicator	Timeframe (Months)	Estimated Cost (US Dollar) '000'	Responsible Agency	Assumption
1. To establish an appropriate legal policy framework for bio-safety	Appropriate institutional framework for bio-safety established.	Using experiences gained in other countries	1. Reviewing existing structures, mandates and linkages	Availability of information and increased understanding of institutional structures, mandates and linkages for institutional reform advocacy.	36	15,000.00	MENR, MAFF, MOH, MIBS, MCTI, and UNZA	Cooperation among stakeholders assured
			2. Attending international seminars, tours and scientific exchange visits.	Number of relevant and appropriate outputs from the attendance that are implemented for biosafety in Zambia.	36	15,000.00	MENR, MAFF, MOH, MIBS, MCTI, and UNZA	Funds are available from both Government and Donors
			3. Equipping the established institutions with the required capital endowment for handling biosafety matters.	Existence of well equipped institutions handling bio-safety matters.	36	60,000.00	MENR, MAFF, MOH, MIBS, MCTI, and UNZA	Supportive political will available. Availability of funds from both government and donors

2. To develop adequate human resources for biosafety.	Adequate human resources for biosafety are developed and put in place.	Training human resources from relevant institutions in risk assessment and management, learning and adapting from experiences of other countries and raising awareness in bio-safety among stakeholders.	1. Training human resources in risk assessment and management.	Availability of trained personnel in risk assessment and management	60	MENR, MAFF, MOH, MIBS, MCTI, and UNZA	Funds are available from both government and donors
			2. Learning and adapting from experiences of other countries.	The number of implemented and successful adaptation from other countries	30	MENR, MAFF, MOH, MIBS, MCTI, UNZA and General Public	▪ Cooperation among stakeholders assured ▪ Funds are available from both government and donors
			3. Carrying out sensitization / awareness campaigns.	The number of public initiatives on bio-safety matters	30	MENR, MAFF, MOH, MIBS, MCTI, UNZA	Funds are available from both government and donors

GOAL 6: Ensure the equitable share benefits from the use of Zambia's biological resources

Objectives	Outputs	Strategies	Activities	Indicators	Timeframe	Responsible Agencies	Assumptions
1. To develop and adopt a legal and institutional framework which will ensure that benefits are shared equitably.	Equitable sharing of benefits	1. Revise legislation to provide for equitable sharing of benefits. Study existing legal frameworks in other countries providing for equitable sharing of benefits and where applicable adapt to local conditions.	1. Reviewing and amending existing legislative provisions for equitable sharing of benefits from natural resources such as, fisheries, forests and wildlife.	Existence of effective legislative provision	12 Months	MLA, MENR, MOT, MAF	Capacity is available locally for the preparation of a new legal framework
			2. Improving capacity in Government to effectively negotiate for equitable sharing of benefits.	Availability of effective government negotiators and existence of equity in benefit sharing	60 months (ongoing)	MENR, MOT, MAFF, MLA, MFED, IUCN	
		2. Develop a legal and institutional framework by strengthening the enforcement of the necessary provisions relevant to ensuring equitable benefit sharing.	Developing capacities (understanding and mechanisms) for implementing institutions to enforce new and existing legislation.	Existence of institutions capable of enforcing legislation on equitable sharing of benefits	24 Months	MENR, MOT, MAFF, ECZ, Local authorities and traditional institutions.	Facilities to available to guarantee a successful training of statekeholders.
2. To create and strengthen community based natural resources management institutions	Effective management and utilisation of natural resources by traditional establishments and local communities	Create and strengthen natural resource management institutions through experiences gained from existing community based resources management schemes	1. Review and identify impediments in benefit sharing mechanisms in existing models and develop improved alternative models.	Existence of a programme for obtaining experiences of other CBNRMs	24months	MENR, MCDSS, MAFF, NGO's, Churches, traditional institutions and local communities.	
			2. Testing of the appropriate models in pilot areas	Number of identified workable models for benefit sharing	60 months (ongoing)	MENR, ECZ, MIBS, MOT/WL, NGO's, CBO's Churches and the private sector.	